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SURVEY OF YELLOWSTONE PARK FOR INFESTATION OF THE MOUNTAIN PINE BEETLE IN LODGEPOLE PINE 1947

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SURVEY OF YELLOWSTONE PARK FOR INFESTATION OF THE MOUNTAIN PINE BEETLE IN LODGEPOLE PINE 1947

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An outbreak of the mountain pine beetle in lodgepole pine to the south of Yellowstone Park necessitated an examination of the latter area in order to complete the overall picture of the infestation in the region. Due to the lateness of the season and the limited manpower available, it was decided to limit ground survey to the areas having indications of mountain pine beetle infestation as revealed by a preliminary aerial examination for red-top trees. It was realized that this method would not reveal any spots of infestation established in 1947 but existing conditions limited the survey to checking of red-top areas.

September 29 and 30 were spent in travel to Yellowstone Park. On October 1, the writer made the aerial examination while the crew checked the timber in the vicinity of West Yellowstone, Montana, for infestation. October 2 was spent in the same general area ground checking red-top groups observed the preceding day from the air. No trees sufficiently infested with the mountain pine beetle to serve for training purposes were found so it became necessary to go to the Teton National Forest in order that the crew could familiarize themselves with this type of infestation. This was done on October 3 and 4.

The aerial examination had revealed red-top groups on the Upper Yellowstone and Lewis River drainages. The lateness of the season and remoteness of the former area made it imperative that the Yellowstone drainage be examined immediately in order that the work be completed before adverse weather conditions prevented effective ground travel. On October 6, the crew was transported 20 miles by boat on Yellowstone Lake to Trail Creek. From there the crew hiked to the Cabin Creek snowshoe cabin, about five miles to the east and across the Yellowstone River. Equipment and supplies for the project were transported by pack horses in the charge of two Park personnel assigned to assist the survey party. Two members of the crew used the Cabin Creek station for their survey headquarters from October 7 to 11 and the Trail Creek station on the 12th and 13th. The other two members of the survey party hiked the 13 miles to Thorofare Station on October 7, at the same time observing the status of the mountain pine beetle in the extensive stands of lodgepole pine in the valley of the Yellowstone River. Extensive survey of the vicinity of the Thorofare Station was continued until August 12 when the return trip was made to Cabin Creek and the remainder of the return trip completed the next day.

The work was favored by generally good weather, only one day being such that field work could not be done effectively. The two Park personnel assigned to assist the survey crew, greatly facilitated the work by their knowledge of the country, and for "ferrying" members of the crew across the larger streams. Horses were used not only for packing into the region but for the longer trips.

Red-top groups and scattered single trees which had been observed from the air and subsequently examined from the ground, were found to have been killed by other factors than the mountain pine beetle. Many trees already decadent from old age or injury had had their death hastened by the lodgepole pine beetle.(1) Ips oregoni, smaller secondary bark beetles, and wood borers had played a similar role on about an equal number of trees. Porcupines, mistletoe, windfall and windfall damage were responsible for most of the remaining loss both currently and in the past few years. Prior to that time the mountain pine beetle had caused losses which equalled about 10 percent of the present stand.

The numerous red-tops on the north side of Bridger Lake were found to be the result of recent blow-downs. This dead and injured material was infested with the lodgepole pine beetle, secondary bark beetles, and wood borers. Only one lightly infested windfall and a standing tree showing about a dozen attacks by the mountain pine beetle at its base, were observed.

Following the survey of the Yellowstone drainage the area between West Thumb and the south entrance of the Park, was examined. The mountain pine beetle was found to be present in two places in this area. About 40 fire-weakened trees in the burned area at Lewis Lake showed, in general, light attacks and brood in lodgepole pine, and medium attacks and brood in the smaller number of whitebark pine. No attacked trees were noted adjoining the burned area, which indicates that the concentration of mountain pine beetle activity in that vicinity is limited to the trees weakened by fire. The second area is about east of the road camp, on Forest and Red Creek drainages. The few trees noted there were lodgepole pine lightly attacked and with a light to medium brood. The ten-mile-long strip run in this area indicated about .06 infested trees per acre. Attacks were limited to the lower ten feet of the tree. The preceding conditions indicate an endemic infestation, but potentially dangerous in view of the epidemic conditions known to be less than 30 miles to the south.

Between Lewis Lake and Heart Lake, beginning about two miles east of the north end of Lewis Lake and extending along the old administrative road to Heart Lake for another three miles, there has been a heavy recent blowdown. In this material, much of it overmature lodgepole pine, there is considerable infestation by Ips oregoni and smaller secondary barkbeetles as well as by the lodgepole pine beetle. No brood of the mountain pine beetle was observed, although average past

losses by this insect, equaling about 10 percent of the present stand, were noted. This loss had occurred sometime prior to the last three years. The numerous windthrown trees may facilitate a build-up of infestation of the mountain pine beetle if the latter should be present in or invades the area. The short time available for the survey made it impossible to determine the boundaries of the blowdown or to sample more of the area. A more intensive examination should be made here in 1948. Except for the two areas discussed, strip run on the Lewis River drainage failed to reveal mountain pine beetle activity.

In past years there has been more or less infestation of the mountain pine beetle in the Mount Washburn area. Fewer red-tops were observed there in mid-October of this year than the writer has noted in any previous year, indicating an endemic condition.

With two exceptions, the concentrations of red-tops observed in the aerial reconnaissance were found from the ground survey to have been caused by other factors than the mountain pine beetle. However, even though no alarming condition was found during this survey, it must be pointed out that there is a possibility of advanced spots of the infestation to the south having invaded the park in 1947. If present, they cannot be detected from the air until the spring of 1948 when the foliage of trees attacked in 1947 will begin to fade. Locating any such spots in 1947 by means of the ground crew could only have been by chance because of the vast area involved and the limited time and personnel available.

In the succeeding tabulation the areas examined and conditions noted have been briefly outlined.

On the accompanying map, the strips run on the survey are shown in red.

SUMMARY OF THE SURVEY OF THE YELLOWSTONE PARK FOR INFESTATION OF THE MOUNTAIN PINE BEETLE IN LODGEPOLE PINE IN 1947

Date	Crew Member	Area Examined	Strip Length & Acreage	Mountain Pine Beetle Status and other Notes
Oct. 6	Entire Crew	Travel from Trail Cr. Cabin to Cabin Cr. Cabin in afternoon	5 miles 40 acres	Two trees lightly attacked on one side for 2nd successive year. Practically no brood. Old losses equal 15 percent of present stand.
7	Gibson & Hegland	Cabin Cr. Cabin to Thorofare Ranger Station	13 miles 104 acres	One tree lightly attacked to 4' for 2nd consecutive yr. Lightning hit in early 1947. Practically no brood.
	Watson	To Junction Beaverdam & Rocky Cr.	5 miles 40 acres	Two very lightly att. trees. Practically no brood.
	Henderson	Beaverdam Cr.	6 miles 48 acres	No attacked trees.
8	Gibson	Bridger Lake blowdown (part)	5 miles 40 acres	Two trees lightly att. Practically no brood. Many Ips oregoni and wood borers. Porcupine kill.
	Hegland	Falcon Creek	4 miles 32 acres	No mountain pine beetle attacks.
	Henderson & Watson	Beaverdam Creek	5 miles 40 acres	Two very lightly attacked trees. No brood.
9	Gibson	Thorofare Cr. to Open Creek	8 miles 64 acres	No attacked trees.
	Hegland	Lynx Creek	11½ miles 92 acres	Two very lightly hit trees. Very little brood.
	Watson	Trapper Creek	3½ miles 28 acres	No attacked trees.
	Henderson	Rocky Creek	4 miles 32 acres	No attacked trees.

Summary Cont.

Date	Crew Member	Area Examined	Strip Length & Acreage	Mountain Pine Beetle Status and other Notes
Oct. 10	Gibson	Atlantic Creek	7 miles 56 acres	No attacked trees.
	Hegland	Mountain Creek	8 miles 64 acres	No attacked trees.
	Watson	Rocky Creek	4 miles 32 acres	No attacked trees.
	Henderson	Cabin Creek	3 miles 24 acres	No attacked trees.
11	Watson & Henderson	Moved to Trail Cr.		Too much snow for effective field work.
	Hegland & Gibson	Too much snow for effective field work.		
12	Watson	Chipmunk Creek	7 miles 56 acres	No attacked trees.
	Henderson	About west from Trail Cr. cabin	3½ miles 28 acres	No attacked trees.
	Hegland & Gibson	Thorofare R. S. to Cabin Creek		Travel on foot.
13	Hegland & Gibson	Cabin Cr. to Trail Cr.		Travel on foot in morning.
	All crew	Across Yellowstone Lake by boat to Lake R.S. in afternoon.		
14	Henderson & Gibson	Lewis Lake Burn	4 miles 64 acres	Scattered fire-injured trees attacked. Light brood in LLP, medium in WBP.
	Hegland	Pitchstone Plateau	5½ miles 44 acres	No attacked trees.
	Watson	West from S. entrance	9 miles 72 acres	No attacked trees.

Summary Cont.

Date	Crew Member	Area Examined	Strip Length & Acreage	Mountain Pine Beetle Status and other Notes
15	Gibson & Watson	Heart Lake	1¾ miles 10¼ acres	No attacked trees.
	Henderson	Snake River	¼ miles 32 acres	No attacked trees.
	Hegland	Forest and Red Creeks	10½ miles 8¼ acres	Five attacked trees. Light attack and light to medium brood.
16	Entire crew	Mt. Washburn area		Very few red-topped trees noted.

(1) This and subsequent similar references are to Dendroctonus murrayanae Hopk.